

Register Number:

0514

Name of the Candidate:

B.E. DEGREE EXAMINATION, 2018

(CIVIL ENGINEERING)

(EIGHTH SEMESTER)

CLEC-801: PRESTRESSED CONCRETE

April /May]

[Time : 3 Hours

Maximum : 75 Marks

Answer any ONE FULL question from each unit (5×15=75)

UNIT - I

1. A rectangular concrete beam of cross section 30cm deep and 20cm wide is prestressed by 15 wires of 5mm dia located 6.5cm from the bottom of the bottom of the beam and 3 wires of diameter of 5mm, 2.5cm from the top. Assuming the prestress in the steel as 840N/mm^2 . Calculate the stresses at the extreme fibres of the midspan section when the beam is supporting its own weight over a span of 6m. If a uniformly distributed live load of 6kN/m is imposed, evaluate the maximum working stress in concrete. The density of concrete is 24kN/m^3 .
2. a) Enumerate the various losses of prestress.
b) A concrete beam is post-tensioned by a cable carrying an initial stress of 1000N/mm^2 . The slip at the jacking end was observed to be 5mm. The modulus of elasticity of steel is 210kN/mm^2 . Estimate the percentage loss of stress due to anchorage slip if the length of the beam is (a) 30m and (b) 3m.

UNIT - II

3. A post tensioned bridge girder with unbounded tendons is of box section of overall dimension 1200mm wide and 1800mm deep, with wall thickness of 150mm. The high tensile steel has an area of 4000mm^2 and is located at an effective depth of 1600mm. The effective prestress in steel after all losses is 1000N/mm^2 and the effective span of the girder is 24m. If $f_{ck} = 40\text{N/mm}^2$ and $f_p = 1600\text{N/mm}^2$. Estimate the ultimate flexural strength of the section.
4. The end block of a post tensioned bridge girder is 500mm wide by 100mm deep. Two cables each compressing 90 high tensile wire of 7mm dia are anchored using square anchor plate of side length 400mm with their centres located at 500mm from the top and bottom of the edges of the beam. The jacking force in each cable is 4000kN. Design a suitable anchorage zone reinforcement using Fe415 grade HYSD bars conforming to IS:1343 provision.

UNIT - III

5. Briefly outline the design procedure of composite section and explain the term shrinkage stresses in composite beam.

6. Design a composite slab for the bridge deck using a standard inverted T-section. The top flange is 300mm wide and 110mm thick. The bottom flange is 550mm wide and 250mm thick. The web thickness is 100mm and the overall depth of the inverted T-section is 655mm. The bridge deck of the inverted has to support a characteristic imposed load of 50kN/m^2 . Over an effective span of 12m. grade -40 concrete is specified for the pre-tensioned T-with a compressive strength at transfer of 36N/mm^2 concrete of grade 30 is used for the insitu part. Determine the minimum prestress necessary and check for safety under serviceability limit state.

UNIT - IV

7. A post tensioned cable of a beam 10m long is initially tensioned to a stress of 1200N/mm^2 at one end. If the tendons are curved so that the slope is $1/24$ at each end with an area of 600mm^2 . Calculate the loss of prestress due to friction given the following data.

Coefficient of friction between duct and cable = 0.55 friction coefficient for wave effect = $0.0015/\text{m}$. During anchoring, if there is a slip of 3mm at the jacking end calculate the final force in the cable and the percentage loss of prestress due to friction and slip $E_s=210\text{kN/mm}^2$.

8. A prestressed concrete beam of section 125mm wide is 300mm deep is used over a effective span of 6.25 support a Udl of 4.5kN/m including self weight. The beam is prestressed by a straight cable carrying a force of 190kN and located of the thrust line in the beam and plot is position.

UNIT - V

9. A cylindrical prestressed concrete water tank of internal dia 30m is required to store water over a depth of 7.5m. The permissible compressive stress in concrete at transfer is 13N/mm^2 and the minimum. Compressive stress under working pressure is 1N/mm^2 the loss ratio is 0.75 wires of 5mm dia with an initial stress of 1000N/mm^2 are available for circumferential winding and prestressing cables made up of 12 wires of 8mm dia stressed to 1200N/mm^2 are to be used for vertical prestressing. Design the tank walls assuming the base as fixed. The cube strength of con is 40N/mm^2 for the thickness of wall is 150mm.
10. With neat sketches, explain the various cross sectional profiles for PSC poles. State the advantages of PSC poles.

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B.E. DEGREE EXAMINATION, 2018

(CIVIL ENGINEERING)

(EIGHTH SEMESTER)

CLEC- 802. MAINTENANCE AND REHABILITATION OF STRUCTURES

May]

[Time : 3 Hours

Maximum : 75 Marks

Answer any ONE FULL question from each unit.

ALL questions carry EQUAL marks.

UNIT - I

- 1 (a) Briefly describe the rebound hammer test and ultrasonic pulse velocity test conducted in determining the strength of existing structures, with neat sketches. (10)
- (b) Brief about the various aspects and objectives of inspection. (5)
2. (a) Discuss briefly about the assessment procedure of evaluating a damaged structure. (10)
- (b) Brief about the various causes of deterioration. (5)

UNIT - II

3. Briefly describe the properties of concrete related with strength, permeability and thermal properties. (15)
4. Briefly describe about the following : (7½ × 2 = 15);
 - (a) Design and construction errors in concrete structures.
 - (b) Effect of cover thickness and cracking in reducing the durability of concrete.

UNIT - III

5. (a) Briefly describe the properties of polymer concrete and sulphur infiltrated concrete. (10)
- (b) Brief about the concrete chemicals. (5)
6. Briefly describe about the following with neat sketches :
 - (a) Grinlite and shotcrete. (b) Epoxy injection. (c) Fibre reinforced concrete. (15)

UNIT - IV

7. Discuss briefly about the repair techniques to be adopted for a cracked wall and a deflected beam. (15)
8. (a) Brief about the steps adopted in the repair of marine structures. (5)
- (b) Brief about the corrosion and its effects on steel in the reinforced concrete structures. (10)

UNIT - V

9. Discuss briefly about the demolition techniques adopted for a old high rise building situated in a densely populated area. (15)
10. Briefly describe the demolition techniques and safety measures to be adopted for a municipal water tank resting on 8 columns and ring beam. (15)

Register Number:

0516

Name of the Candidate:

B.E. DEGREE EXAMINATION, 2018

(CIVIL ENGINEERING)

(EIGHTH SEMESTER)

CLEC-803. INTERIOR DECORATION AND PLANNING

April /May]

[Time : 3 Hours

Maximum : 75 Marks

Answer any ONE FULL question from each unit (5×15=75)

UNIT - I

1. Explain the universal design principles and universal design awareness. (15)
2. Explain in detail about presentation techniques and drawings. (15)

UNIT - II

3. Explain the importance of furniture and maintenance of furniture. (15)
4. Explain in detail about the theory of Anthropometrics and Ergonomics. (15)

UNIT - III

5. Explain the types of kitchen and types of residential kitchens based on shape and requirements. (15)
6. Explain the following in detail:
 - (i) Types of bathrooms (5)
 - (ii) Requirements (5)
 - (iii) Design guidelines for a private bathroom. (5)

UNIT - IV

7. Explain the following in details:
 - (i) Reasons for using paneling (5)
 - (ii) Partition types (5)
 - (iii) Partition applications. (5)
8. Discuss the classification of strain and hand rails and neural posts in staircase (15)

UNIT - V

9. Explain in detail about principles of landscape designs. (15)
10. What is site analysis? Discuss the various types of site analysis and its assessment. (15)

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B.E. DEGREE EXAMINATION, 2018

(COMMON TO ALL BRANCHES)

(EIGHTH SEMESTER)

**CLEC-804 / CSEC-805 / MEEC-803 / MFEC-804 / EEEEC-801 / EIEC-801 / CHEC-805 /
ITEC-802 / ECEC-801. ETHICS IN ENGINEERING**

May]

[Time : 3 Hours

Maximum : 75 Marks

*Answer ONE FULL question from each unit**ALL questions carry EQUAL marks.***UNIT - I**

- 1 Explain the following :
- (a) Moral autonomy. (b) Consensus and controversy.
(c) Preferential ideas and virtues. (5 + 5 + 5)
2. Explain with suitable examples how the respect for other religious beliefs enhances the peaceful living. (15)

UNIT - II

3. (a) Compare and contrast engineering experiments, with standard experiments. (5)
(b) Discuss the ethical issues involved in challenges case study. (10)
4. What are the two features of engineers as 'Responsible Experiments' ? How do the functions of standards regulations and laws differ from one another in their effects on engineering products and practice? (15)

UNIT - III

5. Define collective bargaining. Explain the role of collective bargaining in workplace rights and responsibilities. (15)
6. Write a brief note on :
- (a) Institutional authority. (b) Discrimination. (7 + 8)

UNIT - IV

7. Quote some examples of disaster through which environment has been spoilt totally. Also, mention the ill-effects of acid-rain. (15)
8. Computer ethics involves privacy.- Discuss. (15)

UNIT - V

9. (a) What is meant by contingency fee with respect to engineer ? (8)
(b) What are the ethical issues related to contingency fee ? (7)
10. (a) How can engineers be used effectively for managing conflicts in technological companies? (8)
(b) How is the witness of the engineers considered for judgement ? (7)

Register Number:

0521

Name of the Candidate:

B.E. DEGREE EXAMINATION, 2018
(CIVIL ENGINEERING)
(EIGHTH SEMESTER)
CLEE-806/805. SOLID WASTE AND HAZARDOUS
WASTE MANAGEMENT

April /May]

[Time : 3 Hours

Maximum : 75 Marks

Answer any ONE FULL question from each unit (5×15=75)

UNIT - I

1. Explain the goals and objectives of solid waste management. (15)
2. Explain in detail the sources of municipal solid wastes. (15)

UNIT - II

3. Discuss in detail about storage system and solid waste transportation methods. (15)
4. Explain the various methods of volume reduction in municipal solid wastes. (15)

UNIT - III

5. What is sanitary landfill? Explain the steps involved in the sanitary landfill operations and methods. (15)
6. What are factors should be affected by the environmental in sanitary landfill process discuss in detail? (15)

UNIT - IV

7. Explain the resources recovery possibilities from e-wastes. (15)
8. Discuss the precautions required for the operation of the project from e-waste. (15)

UNIT - V

9. Explain the aerobic composting and anaerobic composting. (15)
10. What is composting? Discuss about the cost consideration of composting methods. (15)

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0519

Name of the Candidate:

B.E. DEGREE EXAMINATION, 2018
(CIVIL ENGINEERING)
(EIGHTH SEMESTER)
CLEE-806/805. HYDRO POWER ENGINEERING

April /May]

[Time : 3 Hours

Maximum : 75 Marks

Answer any ONE FULL question from each unit (5 × 15 = 75)

UNIT - I

1. a) Brief about the various minor losses in pipes. (5)
- b) Describe about the types and functions of Surge tanks. (10)
2. Briefly describe the commonly used methods for hydraulic analysis of distribution system. (15)

UNIT - II

3. Define Surge. What are its types? How the energy dissipated? Explain in detail. (15)
4. What is the purpose of spillway in a dam? Also discuss the basic procedures adopted in the design of spillway. (15)

UNIT - III

5. Brief about the design and analysis different types of power plant. (15)
6. a) Compare Natural draught and induced draught cooling towers. (7½)
- b) Explain hyperbolic cooling towers with neat sketch. (7½)

UNIT - IV

7. a) Write a note on Turbo generator foundation. (7½)
- b) Brief about material handling structures in a hydropower plant. (7½)
8. Brief about the following: (15)
 - (i) Intake towers
 - (ii) Storage structures.

UNIT - V

9. Briefly discuss about the various types of power houses. (15)
10. Explain the various safety measures to be undertaken in power plants. (15)

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